reason was convinced, his strong and masterful disposition made him a leader of men, and thus he became in due course president or chairman of almost every society, association, or public body of which he was a member. His delightful humour and inexhaustible fund of good stories made him the best of companions. Time dealt with him kindly; he bore lightly his burden of more than four-score years, and to the last his mind retained its youthful spring. The sturdy old oak continued green and vigorous until the axe was laid to its root. His genial presence will long be missed at the British Association and numberless other bodies at which he has been a familiar figure for more than half a century. W. R.

NOTES.

The Albert medal of the Royal Society of Arts for the present year has been awarded to Sir James Dewar, F.R.S.

On May 30 Her Majesty the Queen of Holland nominated Sir William Ramsay, K.C.B., as a member of the Dutch Academy of Amsterdam in succession to the late Lord Kelvin.

In the House of Commons on June 3 Sir William Anson asked the President of the Board of Education whether, having regard to the insufficiency of the present temporary buildings at South Kensington for the housing and display of the collections of scientific instruments and apparatus belonging to the Government, and to the importance of making these collections useful to teachers and students of science, and to the Imperial College of Science and Technology, he would consider the advisability of erecting a suitable building for a science museum on the site of the existing temporary galleries. In reply, Mr. McKinnon Wood said:—"I think it would be eminently desirable that there should be a science museum properly housed in immediate propinquity to the Imperial College of Science and Technology, and if the Commissioners of the 1851 Exhibition feel themselves in a position to cooperate, I should be happy to bring the matter under the notice of the Chancellor of the Exchequer; but it is obvious that any steps requiring the financial assistance of the Government could only be undertaken with due regard to the general calls upon the Exchequer."

It was announced some time ago that the Zoological Society of London was arranging for a special exhibition of Australian and New Zealand animals in the society's gardens. Dr. P. Chalmers Mitchell, F.R.S., now informs us that the Governments of New Zealand and New South Wales have each made presents to the society of some of their peculiar birds, mammals, and reptiles, and a very fine collection has been got together from the various Australian colonies. Mr. Seth-Smith, a member of the council of the society, proceeded to Australia last December to make the final arrangements for getting the collection together, and two keepers followed him early in the year to take out a number of animals from the gardens in Regent's Park for the Australian gardens, and to take charge of the returning collection under the direction of Mr. Seth-Smith. The animals left Australia in the White Star liner *Persic* in April, and arrived at Tilbury on Saturday evening. The detailed list is not yet to hand, but from advices the society has received it is certain that the collection will be the most representative one of marsupial mammals and peculiar birds and reptiles of Australia ever got together either in Australia or in Europe.

By the death of Admiralitäsrath Carl Koldeway, which occurred at Hamburg on May 19, Germany has lost a distinguished seaman whose scientific investigations have proved of great practical value. Captain Koldeway was born on October 26, 1837, at Bücken, Hanover, and commenced his career as a sailor in 1853. In 1866 he studied at the polytechnic at Hanover, and in 1867 at Göttingen. He commanded two German North Polar Expeditions during the years 1868–70, the first to Spitsbergen, and the second, with two ships, to north Greenland, where he wintered and made important discoveries. In 1871 Captain Koldeway was appointed first assistant to the Seewarte at Hamburg, and four years later became director of the second section for magnetism, and for the testing of nautical and meteorological instruments. He was specially interested in magnetism, and was entrusted with the compensation of compasses for deviation on board ships of the mercantile marine. In addition to the accounts he published in reference to his voyages to the Arctic regions, he was the author of many valuable papers on magnetism, meteorology, and oceanography, among which may be mentioned "Change of Magnetism in Iron Ships, based on Observations for Deviation" (*Deutsche Seewarte Arch.*, 1879), "Results of Meteorological Observations at Spitsbergen and East Greenland" (*Zeitschrift Meteorol. Vienna*, 1876), "Surface Temperature in the Equatorial Regions of the Atlantic Ocean" (*Annalen Hydrogr.*, 1875).

A letter by Dr. W. N. Shaw, F.R.S., in Saturday's *Times* contains some cogent reasons against the adoption of the proposals in the Daylight Saving Bill, to which reference has been made in these columns on several occasions. In the first place, Dr. Shaw remarks that a large number of meteorological instruments in many parts of the country are designed to record continuously day and night. Are these instruments to run an hour wrong for six months or are meteorologists to use a time system different from that in use in the country? All the operations of meteorological observers would be affected by the change contemplated by the promoters of the Bill, and the passing of an Act to change the standard time twice a year would have to be followed by an instruction to meteorological observers to adhere to the old times for their observations, whatever it might be called according to the clocks. Part of the work of the Meteorological Office, Dr. Shaw points out, is represented by a system of daily telegraphic reports of synchronous observations upon which the weather reports are based. The system is an international one, and this year an important step is being made towards the ideal of international as well as national synchronism. It is important, therefore, that there should be no misunderstanding as to the time standards employed. Dr. Shaw writes feelingly when he says that no one who is concerned with the preservation of records for long series of years to be consulted when all possibility of clearing up ambiguities has passed away can regard the idea of a dual time system with anything but blank dismay. It is curious that in this connection he does not refer to the impossibility of comparing thermometer readings in summer and winter if the change were adopted. The seasonal meddling with the clocks cannot, in fact, be justified from a scientific point of view, and would lead to hopeless confusion in records in which time is a factor. There is no reason why individuals should not practise self-deception to the extent of putting their clocks back or forward as they wish, but for a nation to be compelled to do this by legislation would be the height of folly. It is too much to expect that men of science busy with their own affairs should have to devote their time to the preparation of evidence to show the Select Committee upon the Bill the disturbing nature of the scheme proposed; but as to the weight of competent opinion against the Bill there can be no question.

THE Institution of Electrical Engineers will hold a conversazione at the Natural History Museum, South Kensington, on Thursday, June 25.

To a new species of amphipod crustacean inhabiting sand at the roots of trees at Punta Arenas, Costa Rica, the Rev. T. R. R. Stebbing (Proc. U.S. National Mus., vol. xxxiv., p. 241, No. 1609) gives the name *Orchestoidea biolleyi.*

As the result of recent legislation for regulating the importation of wild animals which might possibly become acclimatised in the United States, the Zoological Society of Philadelphia, according to its report for 1907, finds a marked diminution in the number of specimens received during the year. Although, runs the report, the wisdom of preventing the introduction of objectionable animals is not to be questioned, "regret may be expressed that the minute and vexatious details which must be complied with on bringing into the country even single specimens by casual travellers or steamship-employes, imposes this serious limitation upon zoological gardens."

FROM America we have received a batch of pamphlets dealing with the protection and encouragement of birds. Among these is one issued by the National Association of Audubon Societies on the winter-feeding of wild birds, and a second on the best methods of constructing and placing artificial nesting-places. Statutory bird-protection in Massachusetts forms the subject of a pamphlet sent out by the Board of Agriculture for that State, while some of the commoner birds of Oregon are described and figured in a tract issued by the Oregon State biologist. The claim of the Virginian quail to considerate treatment by the agriculturist is urged by Miss E. A. Reed in a leaflet published by the aforesaid association under the title of "Bob White the Farmer's Friend"; while, finally, we have the first annual report (illustrated by an excellent coloured plate of the wood-duck) of the good work by the Audubon Society of South Carolina during its (at present) short career.

To the *Century Magazine* for June, Mr. G. H. Thayer contributes an article on the concealing (protective) coloration of animals. The article, which discusses the problem from the point of view how and to what extent—and not why—animals are protected by their colouring, is mainly based on the experiments conducted by the well-known artist Mr. Abbott H. Thayer, which were reviewed in NATURE in April, 1902, and are represented by a case with models in the natural history branch of the British Museum. The author re-asserts the claim of this artist to have discovered that the arrangement of light and dark colours on the upper and lower surfaces of the bodies of animals is a factor of much more importance in rendering them invisible than is an agreement between their own colouring and that of their environment. This is graphically illustrated by means of photographs.

NEARLY the whole of the April number of the *American Naturalist* is taken up with the report of a "symposium" on the species-question which took place at a meeting of the American Botanical Society held at Chicago in January last, where various speakers discussed the topic from the point of view of their own special line of study. The first speaker urged that we are in danger of destroying the usefulness of taxonomy in our zeal for describing every differing form as a separate species. We have lost sight of the primitive reason for the formation of species, namely, that we should have fewer things to hold in mind. A second referred to the statement made by ornithologists to the effect that a species may differ by characters which cannot be put into words, so that it can only be recognised when placed alongside specimens of its nearest relatives. In opening a general discussion on all the papers submitted to the meeting, Prof. J. M. Coulter remarked that all the speakers seemed in accord as to the need for action of some kind, and that the idea of a species must be modified. He himself favoured the plan of continuing to name easily recognised forms, calling them species if desired, and then to indicate minor distinctions by numbers. By this the excessive multiplication of names would be avoided, while an exact record would be established. This plan is to a great extent a modification of trinomialism—with the important difference that the third term in the name is discarded in favour of a number.

THE degree to which trees, especially in the seedling stage, will flourish under shade is a consideration of some importance in the regeneration of forests. Mr. R. S. Pearson contributes to the *Indian Forester* (April) a list of Indian trees roughly classed in five sections, according to their light-demanding requirements. Teak, *Terminalia tomentosa*, *Bassia latifolia*, and *Boswellia serrata* are noted as strong light demanders, while the ironwood tree, *Xylia dolabriformis*, *Nyctanthes arbor-tristis*, and *Aegle marmelos* are placed among the heavy shade bearers. A note appended by the editor to an article on Eucalyptus trees offers the practical hint that leaves of the blue gum and other species boiled in cylinders or boilers will be found useful in removing any hard incrustation of lime.

OPINIONS with regard to the limits, sources, and possibilities of Indian cottons are so widely divergent that nothing short of detailed experimental cultivation undertaken by an experienced specialist seems likely to meet with general acceptation. Mr. H. M. Leake publishes in the Journal of the Asiatic Society of Bengal (vol. iv., part i.) a short account of some experiments in the nature of an introductory note. The criterion selected is a "leaf-factor," according to which a leaf may be distinguished as narrow or broad-lobed. Crosses were made between *Gossypium arboreum* or *Gossypium neglectum* and *Gossypium indicum.* The conclusion is arrived at that plants with an intermediate leaf-factor are crosses, and other facts are cited tending to support the view that natural crosses between cotton plants do occur.

IT is always a difficult matter to identify the trees that yield the timber imported from new countries. In this connection it may be said that the sources of West African mahogany have been mainly conjectural, so that it is useful to have the identifications based on the authority of Mr. H. N. Thompson, conservator of forests in northern Nigeria, that are published in the *Kew Bulletin* (No. 4). The three species *senegalensis, grandifolia*, and *Punchii* of the genus Khaya furnish "Benin" mahogany; similar timber from *Entandophragma Candollei*, and "Sapeli" mahogany from a species of Pseudocedrela, are also in demand. "Batum" mahogany is obtained from *Mimusops multinervis*, and a red ironwood said to resist white ant and terido worm is derived from a species of Lophira. Other trees furnish timber that is classed as mahogany, satinwood, cedar, and greenheart.

THE April number of the Journal of the Gypsy Lore Society is mainly devoted to a protest against the action of the Continental Governments who are starting a crusade against vagrancy, and against the attempt in this country, under the Movable Dwellings Bill, to enforce the registration of caravans and to compel the residents in them to send their children to school. This action will, it is said, if pushed too far, drive the Gypsy into city slums, where he will suffer from ill-health and lose his national identity. At the same time, the useful chronicle in the same number of the adventures during the year 1906 of the bodies of Continental Gypsies who took refuge in this country demonstrates the necessity of bringing such people under control. It is difficult to see how any system of regulation, such as that proposed, is consistent with the maintenance of the nomadic life, a picturesque phase of our social system which few would wish to destroy.

IN the Journal of the Franklin Institute (vol. clxv., No. 5) Dr. C. B. Thwing describes a new radiation pyrometer based on the measurement of the total energy of radiation by means of the current generated in a sensitive thermocouple by the radiations concentrated upon it. In the same number Mr. C. L. Huston gives the results of experiments undertaken in order to secure for practical purposes a more accurate knowledge of the interior character and structure of steel.

THE Queensland Geological Survey has issued a second report (Publication No. 204) on the West Moreton (Ipswich) coalfield, with special reference to the Bundamba district. The report, which has been written by Mr. W. E. Cameron, covers thirty-seven pages, and is illustrated by two large coloured geological maps, one plate, and eight illustrations in the text. The West Moreton coalfield is at present the chief producing coalfield in Queensland, its importance being due to the generally useful character of its coal and to its proximity to the chief industrial centre and most important shipping port of the colony. The investigations described in the report show that the resources of the area under consideration will be sufficient to meet any increase likely to occur in the demand for some years.

THE past week has experienced weather changes of an exceptional character. Sharp thunderstorms occurred in nearly all parts of the country. In London and the suburbs the storm experienced on June 4 was unusually severe, and was accompanied, over the southern parts of the metropolis especially, by a heavy fall of large hail and a copious downpour of rain. At Croydon the rainfall exceeded an inch in half an hour. The shade temperature in London on June 4 rose to 81°, and on the following day there was a sharp fall of the thermometer over the entire country. On Saturday, June 6, the highest temperature in London was 59°, 22° lower than two days previous. The colder weather was brought about by the setting in of a northerly wind over the whole of the British Islands, the supply of air being drawn from the neighbourhood of Iceland. On the night of June 6 the exposed thermometer fell almost to the freezing point in the south-east of England.

THE frequency of different forms of clouds during the years 1903–5 is discussed in Appendix i. to the observations made at Batavia Observatory in 1905. The general results of the observations, made four times a day during the three years, show that the percentage of occurrence of cumulus was 35·3, of cirrus 21, and of strato-cumulus 11·3. With reference to the diurnal period, attention is directed to the predominance of stratus and cirrus forms and of clear sky in the morning, of the cumulus forms about noon, and of nimbus forms at the close of the day. The daily change in the amount of each cloud form is nearly the same for both dry and wet seasons, except that during the latter period (October–March) there is a greater prevalence of the nimbus forms in the morning. Also the cirro-stratus form preponderates during the wet season.

IN another interesting appendix to the above-mentioned volume, Dr. W. van Bemmelen (acting director) discusses the influence of days of bright sunshine on the various meteorological elements at Batavia (1889–1906 August 1). Among the results arrived at, he finds that the clearness of the sky decreases the fluctuation of air-pressure in the early morning and emphasises it during the day; in the case of temperature, as one would naturally expect, the air is greatly cooled in the early morning and heated (to about the same degree) in the early afternoon, but the maximum is not retarded. The daily oscillation of relative humidity is strongly emphasised, especially in the wet season. The sea-breeze is much stronger, and the predominance of northerly components is much more conspicuous, but there is no evidence of a strengthening of the feeble land-breeze.

A NORTH WALES branch of the Mathematical Association has lately been formed. Three meetings have already been held in Bangor, and have proved highly successful in stimulating discussions between those engaged in teaching mathematics in secondary and elementary schools in North Wales. The secretary of the branch is Mr. T. G. Creak, Bron Eryri, Llanberis.

SEVERAL papers on aëronautics and on meteorological experiments of aëronautical interest have reached us lately. Prof. L. Palazzo has sent a reprint from the *Bolletino della Società aeoronautica Italiana* describing the results of experiments with kites and *ballons sondes* in the Gulf of Genoa, conducted on board the torpedo-boat *Fulmine*. Prof. Cleveland Abbe has suggested somewhat original methods of studying atmospheric circulation by means of models as well as maps (Bull. Amer. Math. Soc., xiii., 10, and *Monthly Weather Review*, December, 1907). The winds in the Straits of Messina are dealt with by Dr. Filippo Eredia in the *Rivista marittima* for March.

THE International Association for promoting the study of Quaternions and allied Systems of Mathematics has issued its annual report (Lancaster, Pennsylvania: New Era Printing Co., March, 1908). The president, Dr. A. Macfarlane, gives an interesting biography of his predecessor, the late Prof. Charles Casper Joly, with especial reference to his work on quaternion methods. An important feature of the report is the bibliography of recent and recently catalogued literature classified under the heads of matrices, linear substitutions, quadratic forms, bilinear forms, complex numbers, equipollences, vector analysis, commutative algebras, quaternions, biquaternions, linear associative algebras, and general algebra and operations.

MR. E. STANHOPE KITCHIN, Woodford Green, Essex, writes to us directing attention to the prevailing lack of true scientific method on the part of those who are engaged in aëronautical experiments. He gives instances in which experiments have been described on air resistance of rotating planes, where the author of the paper has entirely ignored the necessity of specifying the conditions, and has failed to appreciate the difference between maintaining the torque or the power of the motor constant.

He also mentions that such statements as that the drift is proportional to the velocity, and not to its square, as demonstrated by Langley, find their way into print and are allowed to pass unchallenged. That inaccuracies such as Mr. Kitchin mentions are far too common in papers on aëronautical subjects is probably well known, with the result that the problem of flight is being worked out at the cost of a greater number of failures than would be necessary if more mathematical accuracy could be brought to bear on the work.

IN an article on the discharge of electricity through gases in the May number of the *Journal de Physique*, M. P. Villard, after a critical examination of the present view that the luminous phenomena are due to ionisation or recombination, comes to the conclusion that the opposite is the case, ionisation producing darkness rather than light. His own experiments lead him to the further result that the positive column is not an assemblage of independent particles, but an object of the nature of a vortex filament behaving like a flexible and extensible conductor, only capable of existing in gas ionised to an extent lying between certain limits, but within these limits becoming more prominent and stable as the current is increased. The arc and electric spark, according to M. Villard, are intense discharges in which the positive column plays the most important *rôle*, the negative phenomena having disappeared, while in the vacuum-tube discharge the opposite holds.

IT has been recognised for some time that when an electric discharge passes through a gas the product of the length of the spark into the pressure of the gas at which the spark passes most easily is a quantity characteristic of the particular gas used, and very nearly proportional to the mean free path of the molecules of the gas. Dr. E. Lohr, of Vienna, finds, further (*Sitzungsberichte der Wiener Akademie*, 1907, p. 1281), that the above-named product is inversely proportional to the refraction constant $n-1$ of the gas. Since the mean free path is proportional to the viscosity of the gas, Dr. Lohr draws the somewhat startling conclusion that the velocity of propagation of light in a gas is a function of the viscosity of the gas, and is, *ceteris paribus*, the greater the greater the viscosity.

So many experimenters are now interested in the accurate measurement of the alternating currents used in wireless telegraphy that it may be worth while to reproduce a portion of a table of relative sensitiveness of some of the best known of the instruments suitable for such work, given by Von Espinosa in the "Jahrbuch der drahtlosen Telegraphie," p. 328 :—

Instrument	Resistance in ohms	Watts necessary to give standard deflection
Hot wire air-thermometer with thin copper wire	0·8 ...	$2·5 \times 10^{-2}$
Hot wire air-thermometer with thin manganin wire	34 ...	$2·0 \times 10^{-2}$
Bolometer with iron wire in air ...	1·8 ...	$2·5 \times 10^{-4}$
„ „ vacuum	2·2 ...	9×10^{-6}
Thermo-couple of iron-eureka (Konstantan) in vacuum	5·1 ...	2×10^{-4}
Duddell thermo-galvanometer ...	18 to 100 ...	5×10^{-6}

THE Board of Education is endeavouring to encourage practical work in the geography teaching of schools, and has suggested exercises of various kinds suitable for the pupils themselves to work. These exercises include a daily record of the pressure and temperature of the atmosphere the amount of rainfall, the direction of the wind, and so on. To assist teachers in securing a permanent record of these observations, Messrs. George Philip and Son, Ltd., have published a Meteorological Calendar consisting of fifty-two weekly sheets, each of which includes suitable barometer, thermometer, and rainfall tables, and a chart for recording wind direction. The calendar costs 2*s.* net, and the publishers are prepared to supply the sheets in quantity for the use of pupils. The sheets should prove useful in schools.

THE volume of "Extracts from Narrative Reports of Officers of the Survey of India" for the season 1905–6 deals, as usual, with a variety of topics. The progress made with the magnetic survey under the immediate direction of Captain R. H. Thomas, R.E., has been slower than in recent years, owing to the greater remoteness of the districts dealt with. It is hoped, however, that by the end of 1908 the "preliminary" survey will have been completed; by this apparently is meant a survey sufficient to indicate the general magnetic character of India, leaving for the future a detailed survey of any districts that may prove to be specially disturbed or otherwise of exceptional interest. A variety of magnetic information is given in tabular form, including the diurnal variation from selected "quiet" days for the observatories at Dehra Dun, Barrackpore, Kodaikanal, and Toungoo. As usual, considerable space is devoted to the comparison of instruments and their various defects. Pendulum observations were made, as previously, under the direction of Major Lenox Conyngham, R.E. To eliminate so far as possible the disturbing effects of temperature, observations were never taken, as in previous years, in a tent, but only where a house of some kind was available. Notwithstanding all precautions, irregularities still arise which it seems difficult to account for. During the year nine stations had self-recording tide gauges at work. The observations for 1905 were reduced by harmonic analysis at Dehra Dun, while full particulars of the observed values during 1904, with values of the tidal constants for 1908, were transmitted to the National Physical Laboratory, where the tidal predictor is at work. Particulars are given of the comparison of observed and predicted tidal results for 1905. Levelling operations were carried out by two parties, but call for no special remark.

THE Clarendon Press, Oxford, has published "A Chart of English Speech Sounds, with Key-words and Notes," by Mr. Daniel Jones, lecturer in phonetics at University College, London. The pronunciation of the key-words is that usually adopted by educated people in London and the neighbourhood. The price of the chart is 4*d.* net.

MESSRS. MACMILLAN AND CO., LTD., have published a third English edition of Prof. Wilhelm Ostwald's "Scientific Foundations of Analytical Chemistry treated in an Experimental Manner." The work has been translated by Dr. George M'Gowan from the fourth German edition, with further alterations and additions by Prof. Ostwald. The price of the volume is 6*s.* net.

A SALE by auction will take place in Berlin on June 20 next of scientific and mathematical manuscripts and books of the sixteenth to the eighteenth centuries. We have received a catalogue of the sale from Mr. W. Junk, Berlin W., Kurfürstendamm 201, with whom those persons unable to attend the sale, yet anxious to procure books or manuscripts, should correspond.